

$V_R$	1200V
$I_F$	20A
$Q_C$	65nC

### ●Features

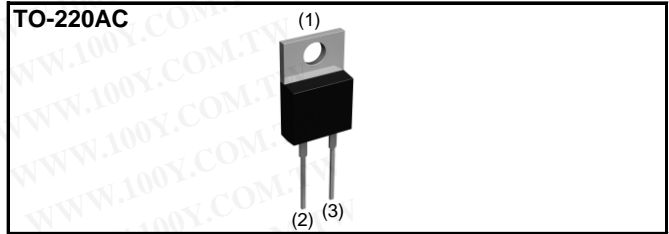
- 1) Shorter recovery time
- 2) Reduced temperature dependence
- 3) High-speed switching possible

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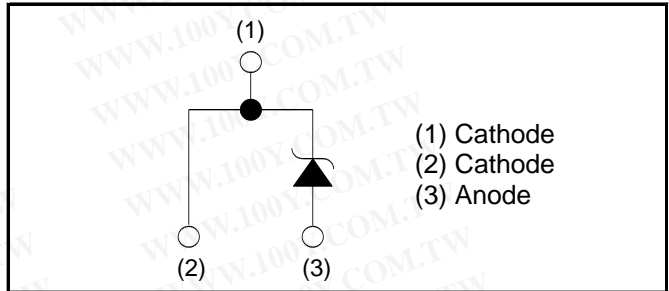
### ●Construction

Silicon carbide epitaxial planer type

### ●Outline



### ●Inner circuit



### ●Packaging specifications

Type	Packaging	Tube
	Reel size (mm)	-
	Tape width (mm)	-
	Basic ordering unit (pcs)	50
	Taping code	C
	Marking	SCS220KG

### ●Absolute maximum ratings (Tj = 25°C)

Parameter	Symbol	Value	Unit
Reverse voltage (repetitive peak)	$V_{RM}$	1200	V
Reverse voltage (DC)	$V_R$	1200	V
Continuous forward current	$I_F$	20* <sup>1</sup>	A
Surge no repetitive forward current	$I_{FSM}$	82* <sup>2</sup>	A
		310* <sup>3</sup>	A
		62* <sup>4</sup>	A
Repetitive peak forward current	$I_{FRM}$	77* <sup>5</sup>	A
Total power dissipation	$P_D$	210* <sup>6</sup>	W
Junction temperature	Tj	175	°C
Range of storage temperature	Tstg	-55 to +175	°C

\*1 Tc=133°C \*2 PW=8.3ms sinusoidal, Tj=25°C \*3 PW=10μs square, Tj=25°C

\*4 PW=8.3ms sinusoidal, Tj=150°C \*5 Tc=100°C, Tj=150°C, Duty cycle=10% \*6 Tc=25°C

●Electrical characteristics (T<sub>j</sub> = 25°C)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
DC blocking voltage	V <sub>DC</sub>	I <sub>R</sub> =0.4mA	1200	-	-	V
Forward voltage	V <sub>F</sub>	I <sub>F</sub> =20A, T <sub>j</sub> =25°C	-	1.4	1.6	V
		I <sub>F</sub> =20A, T <sub>j</sub> =150°C	-	1.8	-	V
		I <sub>F</sub> =20A, T <sub>j</sub> =175°C	-	1.9	-	V
Reverse current	I <sub>R</sub>	V <sub>R</sub> =1200V, T <sub>j</sub> =25°C	-	20	400	μA
		V <sub>R</sub> =1200V, T <sub>j</sub> =150°C	-	160	-	μA
		V <sub>R</sub> =1200V, T <sub>j</sub> =175°C	-	260	-	μA
Total capacitance	C	V <sub>R</sub> =1V, f=1MHz	-	1060	-	pF
		V <sub>R</sub> =800V, f=1MHz	-	85	-	pF
Total capacitive charge	Q <sub>C</sub>	V <sub>R</sub> =800V, di/dt=500A/μs	-	65	-	nC
Switching time	t <sub>c</sub>	V <sub>R</sub> =800V, di/dt=500A/μs	-	18	-	ns

●Thermal characteristics

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Thermal resistance	R <sub>th(j-c)</sub>	-	-	0.62	0.71	°C/W

●Electrical characteristic curves

Fig.1  $V_F - I_F$  Characteristics

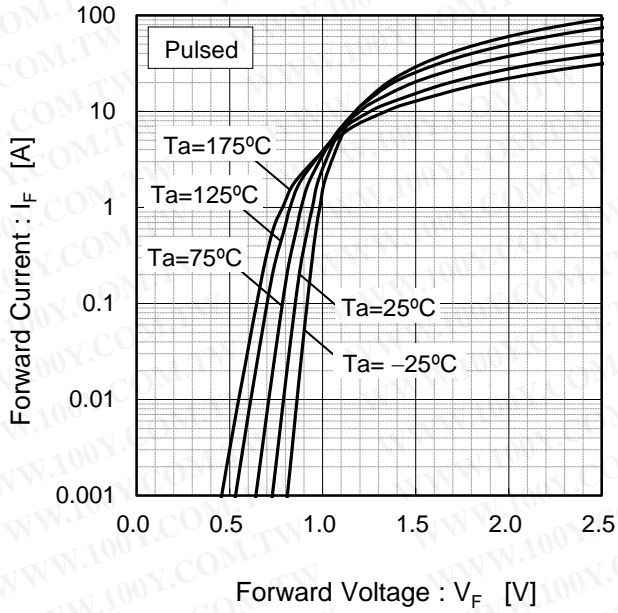


Fig.2  $V_F - I_F$  Characteristics

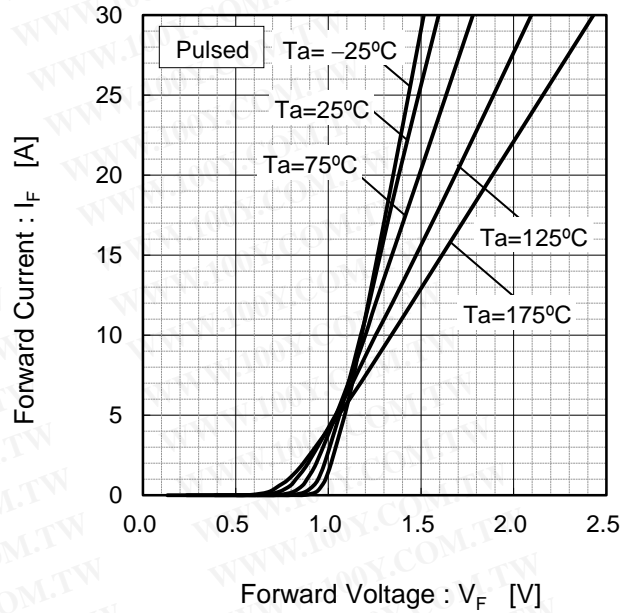


Fig.3  $V_R - I_R$  Characteristics

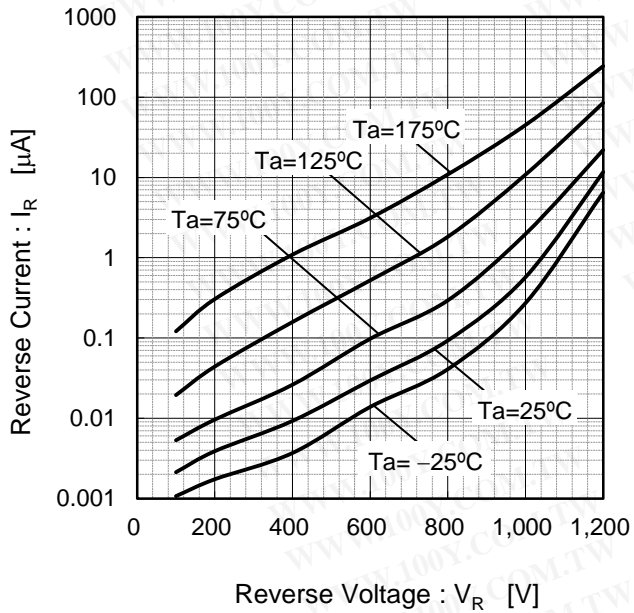
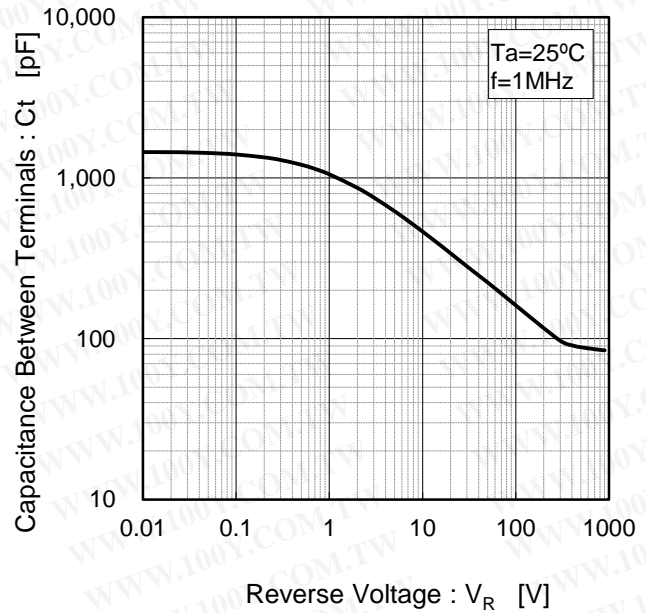


Fig.4  $V_R - C_t$  Characteristics



●Electrical characteristic curves

Fig.5 Thermal Resistance vs. Pulse Width

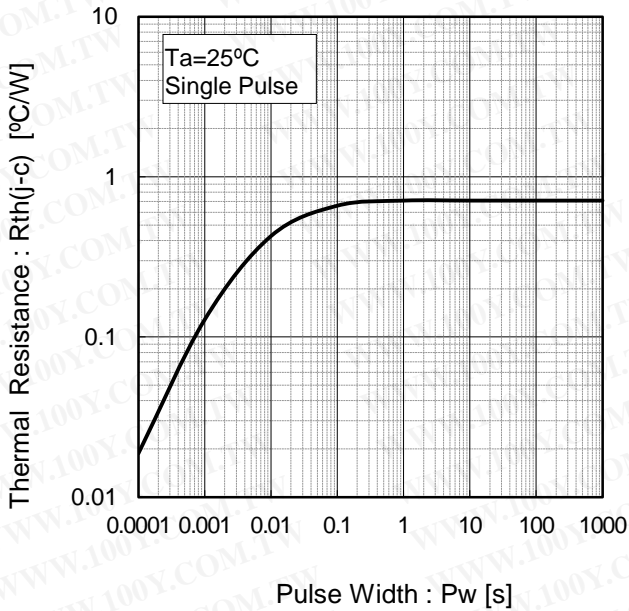


Fig.6 Power Dissipation

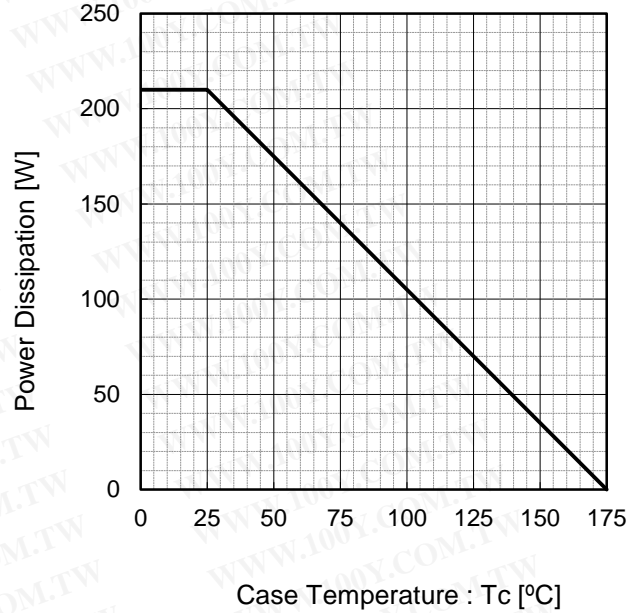


Fig.7 Ip-Tc Derating Curve

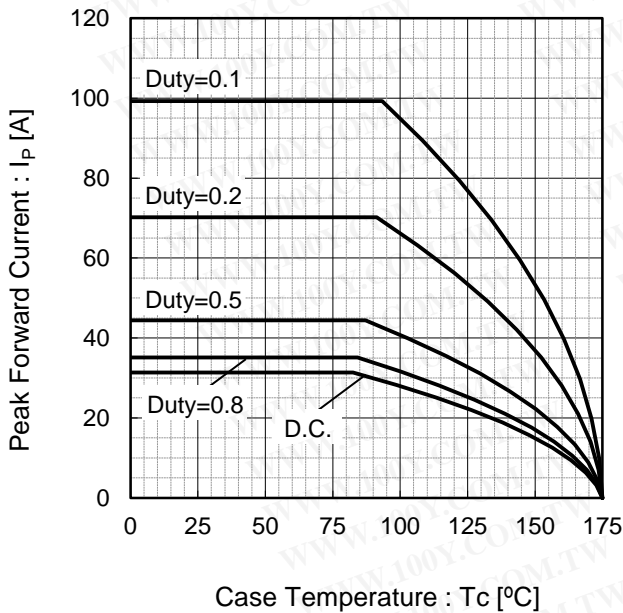
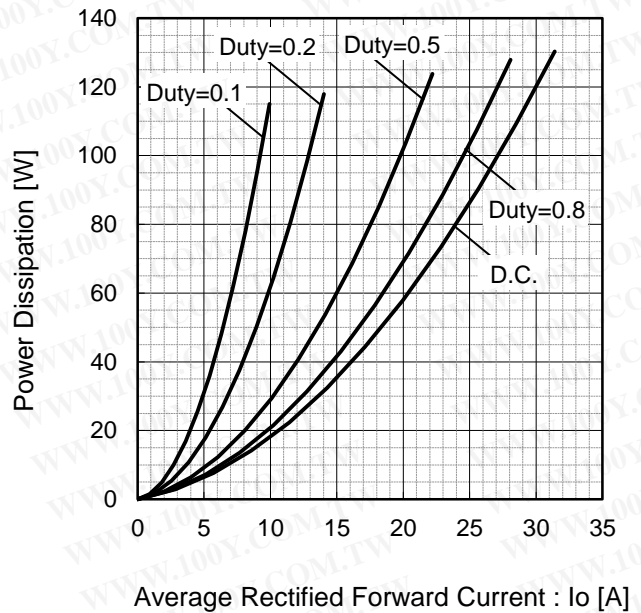
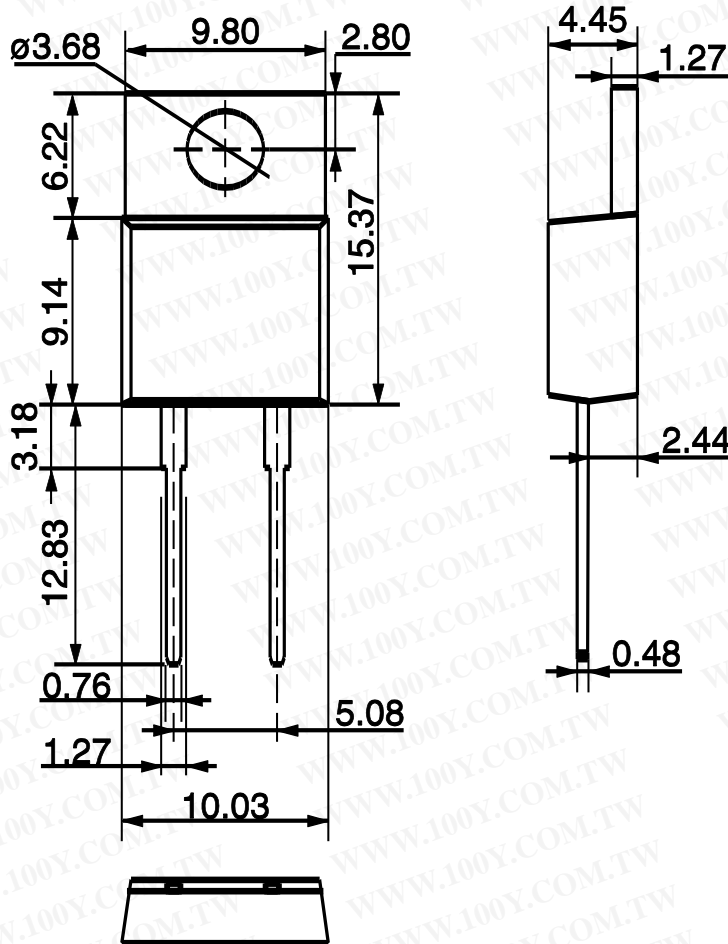


Fig.8 Io-Pf Characteristics



●Dimensions (Unit : mm)

TO-220AC



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